

Before the  
**FEDERAL COMMUNICATIONS COMMISSION**  
Washington, DC 20554

In the Matter of	)	
	)	
Amendment of Parts 1, 21, 73, 74 and 101 of the Commission's	)	WT Docket No. 03-66
Rules to Facilitate the Provision of Fixed and Mobile Broadband	)	RM-10586
Access, Educational and Other Advanced Services in the 2150-2162	)	
and 2500-2690 MHz Bands	)	
	)	
Part 1 of the Commission's Rules - Further Competitive Bidding	)	
Procedures	)	WT Docket No. 03-67
	)	
Amendment of Parts 21 and 74 to Enable Multipoint Distribution	)	
Service and the Instructional Television Fixed Service Amendment	)	MM Docket No. 97-217
of Parts 21 and 74 to Engage in Fixed Two-Way Transmissions	)	
	)	
Amendment of Parts 21 and 74 of the Commission's Rules With	)	
Regard to Licensing in the Multipoint Distribution Service and in the	)	
Instructional Television Fixed Service for the Gulf of Mexico	)	WT Docket No. 02-68
	)	RM-9718
	)	
	)	
	)	

**COMMENTS OF THE SCHOOL BOARD OF BROWARD COUNTY**

The School Board of Broward County ("SBBC") herewith submits its Comments in response to the captioned Notice of Proposed Rule Making. Broward applauds the FCC's decision to initiate this proceeding, which we view as a signal opportunity for the Commission to ensure the ongoing use of ITFS for educational purposes. As discussed below, the outcome of this proceeding should be a reorganized spectrum band operating under rules and procedures that continue to reserve ITFS spectrum for educators, and establish the flexibility that will permit efficient technical operations for broadband data applications, while preserving existing ITFS video service capabilities.

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Thomas Jefferson's belief that public education would be the single-greatest force for achieving America's promise, has sometimes been thought naïve. 'How many other

variables, after all, determine the future of a society or an individual?’ But whatever cache such cynicism might have held in earlier eras, today Jefferson’s prescience could not be more evident. In our contemporary ‘knowledge culture’, the extent of one’s ability to participate meaningfully in society and play a productive role in the workplace, will be fundamentally contingent on the nature and quality of one’s education.

Given this state of affairs, it is not an exaggeration to say that the advent of the Internet, of high-speed Internet-access technologies, and of broadband-enabled applications, together are a development of watershed significance, in primary part because of what this augurs for public education and its relationship to society over the coming years. Regulatory policy relating to this phenomenon should be crafted with that long view in focus. Unfortunately, the NPRM does not consistently reflect this orientation. While we support the ‘flexibility’ the NPRM envisages for educators, we are concerned that other aspects of the Commission’s thinking may not fully appreciate the facilitative effects that a strong pro-education policy will have on the agency’s other policy objectives; and that this lack of clarity may lead to a dilution of ITFS licensees’ existing rights or regulatory status. We therefore respectfully urge the Commission in its final rules in this proceeding to eliminate any hint of equivocation or mere lip-service regarding its commitment to broadband in the service of public education, and in particular, to the vital role that ITFS must continue to play in that sphere.

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#### I. SBBC’S INTEREST IN THIS PROCEEDING.

1. *Demographics of Broward County School System.* Broward County is one of the largest fully-accredited school district in the United States, with approximately 279,000

students enrolled in 215 schools and centers. It is also one of the nation's fastest growing school districts. Between 1990 and 2000, the student population increased an average of 5.5 percent per year, close to seven times the national average for school systems.

In many ways, the Broward County School System is a microcosm of present-day America. SBBC serves an economically, culturally, and academically diverse population. Its students represent 155 countries and speak 57 languages. This diversity is attributable in large part to socio-demographic trends that include the continual influx of immigrants from Central America, South America and the Caribbean, and a minority population that has increasingly exceeded that of non-minority students over the past decade. In 2000-2001, for example, 59 percent of SBBC students were minority. Students come from a spectrum of socio-economic and cultural backgrounds, abilities and disabilities, learning styles and family circumstances. Among total students enrolled in Broward County public schools, roughly 10 percent are Limited English Proficient; 14 percent have exceptionalities such as gifted or physically, mentally, or learning disabled; and 36 percent are eligible for free and reduced lunch.

SBBC serves some 200,000 adult learners and is the largest provider of literacy services to the adult community in Broward County. Nearly 74,000 adults are enrolled in programs towards a degree or certification.

2. *SBBC's Experience As An ITFS Licensee.* Broward County has been an ITFS licensee since 1967, making it one of the most venerable and experienced users of ITFS spectrum in the country. In the course of a year, its ITFS operations serve several hundred thousand users (students, teachers, administrators, adult consumers), and the County is nationally recognized as an innovative leader in the ITFS arena.

SBBC's ITFS and other communications facilities are operated under the direction of the Broward Education Communications Network (BECON) – the school system's principal architect of distance learning services and programs. BECON's distance learning services include the delivery of educational programming to classrooms in videoconferencing and web streaming formats. BECON likewise provides distance learning staff training and community adult education services.

BECON has a proven track record in the field of distance learning. In the last seven years, the program has developed from four video-conferencing units facilitating two academic high school courses and one staff development effort, to over 120 video-conferencing units, nine academic high school courses, 1250 academic programs, virtual field trips and special events for elementary, middle and high school students. Staff development opportunities have continued to increase with such offerings as: National Board Certification Workshops, ESE training, and meetings between Curriculum Supervisors and their department heads. Three years ago, BECON was responsible for securing an affiliation with the Florida Virtual School, which enables Broward County students to take courses for high school credit online. Scores of full-time virtual students and hundreds of part-time students enroll in one or more of these courses while still attending their traditional school. In addition, BECON's on-site production studios have created award-winning educational programming delivered to students, teachers, administrators, and parents throughout Broward County, and distributed nationally to other school systems.

As the number of students and schools served by SBBC have increased, so have the demands placed on Broward's communications facilities. The instant proceeding is

an opportunity for the Commission to give educators the flexibility they need to address such needs most responsively. The NPRM contains elements of a coherent approach. In our view, however, the final regulatory framework must take into account the following issues.

## II. OVER-RELIANCE ON MARKET ECONOMICS IN THIS CONTEXT IS DETRIMENTAL TO THE PUBLIC INTEREST.

1. There is wide consensus that broadband capability is critically necessary for high-quality public education in the 21<sup>st</sup> Century. The full dimensionality of that proposition, however, is complex – and oftentimes is not adequately developed even in contemporary analyses of education policy. There is thus an obvious danger that if the notion of broadband as a core educational necessity is not articulated beyond its initial level of abstraction, the resulting policy will be flawed.

The risk that the magnitude of broadband's role in contemporary education might be *underquantified* is especially great in policy analyses for which the public interest calculus is heavily influenced by market economics. To be sure, competition, new investment, and innovation, working in dynamic interaction, can have profoundly salutary effects throughout the economy. There is today, however, a genuine sense in which public education is acquiring a logical priority not previously in play, such that it should be viewed as the vital predicate for the fullest realization of these other policy objectives over time. If our public schools do not produce students equipped to play a role in the global knowledge economy, innovation will be sub-par, our competitive prowess will be diluted, and new investment will go overseas. As we discuss below, broadband capability is not merely a useful tool but a *sine qua non* for high-quality public

education – that is, education of a nature and scope demanded by a knowledge-based economy. Thus, to the extent that FCC policy developed in this proceeding would protect broadband capability for educational institutions, this would harmonize with and support the Commission’s other important policy objectives.

We are concerned, however, that the NPRM reveals an ambivalence on this score. On one hand, the Commission expresses its “hope to grant educators additional rights to make it easier for them to use our national spectrum resource” (¶ 7) and that “ITFS can and should play a role in making broadband more common to our students’ educational experience” (¶ 33). On the other hand, the NPRM “seeks comment on what ITFS enables educators to achieve that the Internet could not . . . [and] whether continuing to restrict the eligibility for ITFS spectrum is in the public interest or whether maintaining educational responsibilities remains in the public interest.” ¶ 114.

Even when the Commission is ostensibly reassuring the educational community, it reveals an apparent bias. For example, at Paragraph 39 of the NPRM the FCC states: “When we allow increased flexibility in the use of radio spectrum, we allow market forces and educational needs to move spectrum to its highest valued use.” At first blush this sounds fair-minded. The problem, of course, lies in the fact that “highest valued use” is a term of art in the economic theory that the FCC widely and strictly employs in setting policy. Under that theory, the “highest valued use” of a resource is achieved in only one way, namely, when its use (including its allocation) is driven by market forces. We thus find the Commission devoting extensive space in the NPRM to the concept of permitting *non-educational* entities to hold ITFS spectrum or auctions that envisage an ITFS licensee’s giving up its spectrum to the highest-bidding commercial entity.

To help crystallize the conditions that must obtain in order for the link between broadband and public schools to be meaningful, we review below the features of today's environment that dictate the requirement of broadband capability. We then consider, in that context, the magnitude of broadband capacity that will be commensurate with those needs and urge that ITFS should be preserved as a distinct vehicle for that purpose.

### III. THE MAGNITUDE OF EDUCATION'S ROLE IN THE KNOWLEDGE ECONOMY AND OF BROADBAND'S ROLE IN CONTEMPORARY EDUCATION.

1. The magnitude of broadband's relevance to public education directly relates to the nature of contemporary society and the contemporary workplace. The changes underway in today's society are vast. In every realm – the professions, business, the family and home – conditions are significantly different from those of even ten years ago. With respect to virtually any subject matter or discipline, the knowledge defining the scope of that discipline is expanding geometrically. Advanced technologies, communications media, and the Internet in particular, are at once the primary drivers of this accelerating expansion of knowledge and of pervasive and instantaneous dissemination.

In tandem with this unprecedented enlargement of knowledge is the changing nature of work and commerce. More and more people work in sectors that require the ongoing creation, transformation and communication of knowledge. The value of a firm's employees is more and more a function of what they know, how well they can learn, and what they have contributed recently to relevant knowledge bases. In earlier periods, it sufficed to have an educated elite and a general population with basic literacy skills. Today, however, almost any function that can be executed through the application of

regular procedures will sooner or later be computerized. To be attractive to employers, an individual must be highly literate in the skills that drive a knowledge economy.

Correlative with these structural changes in the outside world, the way that young people relate to events and to others is also changing. Today's K-12 students are connected to a web of people and information that surpasses anything in human history. As one observer has put it: "The movement from linear to hypermedia learning; from instruction to discovery and learning by doing; from absorbing information to navigating and using it, from studying alone to studying collaboratively and globally; from mass education to mass customization; from learning as work to learning as entertainment and fun; and from teacher as transmitter to teacher as facilitator. For them, learning is not a matter of mass assimilations of information, but a very personal journey of discovery and of creating knowledge from thousands of resources." A. Reynolds, "Evolving Models of Pedagogy," *Conceptiv Policy Analyses* (Winter 2002).

These changes are so rapid and so decisive that it is untenable for schools to attempt to deal with them merely by making a few superficial adjustments. A high-speed broadband network for public school education represents a critical piece of the infrastructure necessary for teachers and learners to keep pace with the "anytime, anywhere" universe of information services emerging in the private sector. Among the features of the educational environment that broadband enables are: synchronous (real time) and asynchronous (on demand) interaction and collaboration across distances; greater use of data, text, graphics, voice, and video to supplement textbooks and instruction with multimedia formats that tap into the many different learning styles of students and teachers; on-line delivery of instruction where the number of students is too



small or a teacher is not available; and training students in the use of technology through the integration with academic instruction in a meaningful way enhances learning and ensures that students have the skills necessary to be successful in today's knowledge-based workforce. For students who do not have computer and Internet access at home, the school may be their only chance to develop computer literacy skills and information competency.

Moreover, the pace and complexity of change place enormous demands on educators at all levels to access, interpret, and communicate information more rapidly than in the past. The proliferation of information about students, resources, and curriculum are increasing the difficulty of making decisions and developing quality education programs in a timely manner. Within a shared decision-making environment, information must be available to parents, teachers, principals, school boards, and administrators, and in many instances, even students, on order to bring about the optimal use of human and instructional resources. Educators must therefore have the adequate network capacity for delivery of student support services to help with course selection, college placement, and entrance exam information, as well as career and vocational counseling; and for the voluminous information inherent in student data management operations.

#### IV. THE FCC SHOULD CRAFT RULES ENSURING THAT EDUCATORS WILL HAVE SUFFICIENT BROADBAND NETWORK CAPACITY AND OPERATIONAL FLEXIBILITY.

Adequate bandwidth and operational flexibility are necessary to take advantage of these prospects. To take one example, the ability to utilize a full range of multimedia and interactive learning resources depends on the speed of the connection. It is, quite

literally, a question of how much data, graphics, voice, and video information can be transmitted, and how quickly this occurs. Moreover, bandwidth needs will grow rapidly over the next decade as network-based resources evolve and as users become more proficient in the use of such resources.

Although lower-speed connections afford some level of access to multimedia resources, differences in network speeds can produce huge variations in the quality of a student's learning experience. Downloading a 45-second instruction video (7MB file) with a dial-up connection to the Internet, using a 56 kbps modem, would take a student about 16 minutes. With an ISDN technology, the time would be 7.2 minutes, and with a low-end so-called DSL connection the wait would be 2.3 minutes. However, with a T-1 connection, the time required would be reduced to 37 seconds; with a DS-3 connection, it would take merely 1 second.

These comparisons demonstrate why connection speeds below T-1 are not adequate to support on-line resources. High-speed networking is not simply a matter of convenience; it is the defining factor in whether or not an on-line resource is usable in the classroom. If the connection speed is too low, teachers will not use the resource.

SBBC currently operates a wired T1 network. The existing applications in use are: Internet access; e-mail; video conferencing; IP-based applications; Wide Area Network traffic (administrative messages, file transfers, etc.); and online courses. These services are currently being supported on a wired basis over multiple T-1 lines. However, in order to implement the range of capabilities needed for ongoing instructional and administrative purposes and to accommodate rapid growth in the student population, new applications must be added to the network. These include: streaming video and video on

demand. Prospective new services to private access to homes of students are: [Internet access to homes of students, staff, and administrators](#); mobile Internet [access to laptops and PDAs](#), inter-building connectivity, and connectivity to off-campus sites (libraries, tech centers, community buildings, etc.).

These applications put the current bandwidth requirements as follows: 10 Mbps to elementary schools, 20 Mbps to middle schools, administration buildings, and off-campus sites such as libraries and government buildings; 45 Mbps to high schools, and backhaul links of 155 Mbps. These requirements are increasing every year, forcing SBBC to plan for expansion in the future. The most pragmatic and viable platform for doing this is SBBC's eight ITFS channels.

Although the current ITFS channel plan will support a limited degree of connectivity to SBBC's schools, the restriction of 6 MHz per channel will only allow a maximum throughput of 20 Mbps. While useful in some cases, this will not provide the requisite capability for SBBC's purposes or needs.

SBBC's two ITFS channel groups comprise 48 MHz of spectrum, sufficient to accommodate the needs described above. To do so, however, will require that its channels be contiguous. Although the "3-1-3" configuration proposed by the Coalition would allow some increase in data throughput, it would not be sufficient for the purposes we have discussed. That is, SBBC will need to use all of its licensed spectrum in a continuous block in order to meet the 155 Mbps requirement. Accordingly, we propose that licensees have the flexibility of electing contiguous licensing of their channels consistent with the foregoing. The "3-1-3" plan effectively is structured for two separate

purposes – wireless data and analog video – and thus is limitative in cases such as SBBC envisages, where only one use, wireless data transmission, is contemplated.

#### V. TRANSITION PROCEDURES TO ACCOMMODATE THE NEEDED FLEXIBILITY.

The Coalition has urged that there should be no specific requirement for any given licensee, or even any market, to transition to the new band plan by any particular deadline. Instead, any party that wishes to take advantage of the band plan and rules in any given market (the “Proponent”) would be required to take steps to transition the current video operations of each ITFS licensee in that market to the MBS channel of that licensee, at no cost to the ITFS licensee. In many cases, adjacent markets with sufficient proximity would also have to be transitioned to the new band plan prior to any commercial operations in the original market, to prevent interference between the original and adjacent markets. The Coalition’s proposal included a relatively detailed description of the process for notice, negotiation and effectuation of the transition process, as well as protection for ITFS licensees in the process.

The NPRM offers several possible approaches to transitioning to the new band plan; for example, to utilize the Coalition’s basic transition mechanism, but establish a date certain for the transition to end. Presumably this would mean that ITFS licensees would have to pay their own transition costs if they were not transitioned by a Proponent by the deadline. Clearly, the closer to the deadline, the less leverage an ITFS licensee would have in inducing any potential proponent to bear the costs of the transition. Another approach contemplates that the transition could simply be effectuated by an auction to restructure the bands.

We believe that the Coalition's proposal does the best job of ensuring that transitions go forward unobstructed by greenmail or other reservations when a Proponent determines that a transition is required to begin new two-way service.

#### VI. EXISTING ITFS ELIGIBILITY RESTRICTIONS SHOULD REMAIN.

The NPRM contains an exhaustive discussion concerning whether the FCC should revisit ITFS eligibility restrictions, including the possibility of permitting commercial entities to become licensed on ITFS channels. According to the NPRM, these proposals stem from the Commission's general policy goal of eliminating spectrum use restrictions except in circumstances where there are clear and compelling reasons for retaining such restrictions. They also stem from the Commission's desire to permit market forces to push radio spectrum to its 'highest use'.

As we have discussed earlier, there are compelling reasons not to permit market forces alone to dictate the control and use of ITFS spectrum, and we urge the Commission to reject an approach that would do so to the detriment of the preservation and protection of ITFS as a distinct educational service.

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Respectfully submitted,

THE SCHOOL BOARD OF BROWARD COUNTY

By: \_\_\_\_\_  
Ronald D. Maines

Wood Maines & Brown, Chartered  
1827 Jefferson Place, NW  
Washington, DC 20036  
202.293.5333

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